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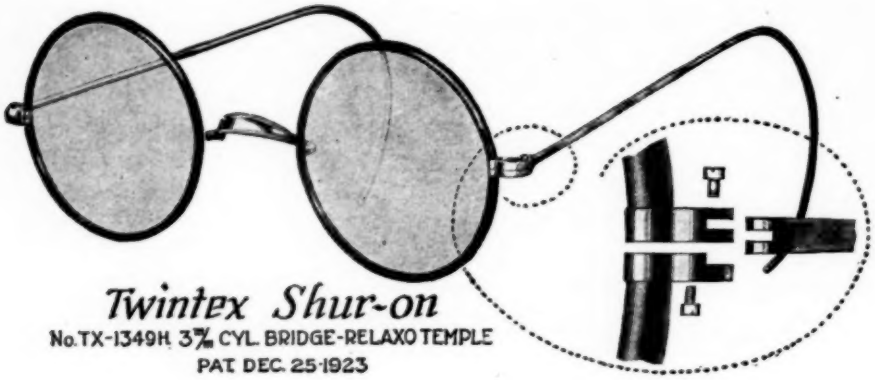

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AMERICAN JOURNAL OF OPTOMETRY

Vol. 2 DECEMBER, 1925 No. 12

HEADACHES

F. G. Folken, M.D.
Albert Lea, Minnesota

Being a Paper Read Before the Southern Minnesota Optometric Society, October, 1925

In presenting this paper to you gentlemen, I will try and bring out the general view points and give special stress to the ocular headaches; for you are more interested in that particular type.

To cover the field thoroughly is impossible in a single paper, however, I shall try and convey to you, not only personal observations, but also what I have been able to find in the literature written by some of the foremost men in this country and abroad.

Headache defined is a pain or ache in any part of the head, it may vary in type, location, duration and severity. It is purely a symptom caused by an abnormality or condition which may exist not only in the head or its parts but also in the remainder of the body. I make this statement because, too often, those of us who do special work do not give sufficient consideration to the remainder of the body when the patient complains of a symptom confined to our field of specialty. Because it is the commonest symptom known the practitioner too frequently fails to give it the proper consideration and therefore overlooks many affections which quite often are of a serious nature. For example, menegitis, glaucoma, iritis, brain tumor, etc., etc., I do not wish to infer that when a case with headache presents itself we should think of the worst disease first, but I do believe that one should have some knowledge of all the causes of this greatly varying and many times most obstinate symptom known to the healing art.

The following is a list of the most important causes and I have attempted to arrange them according to their frequency:

1. Fatigue, bad air and hunger.
2. Constipation and indigestion (biliousness).
3. Eye strain and intrinsic diseases of the eye.
4. Onset of infectious diseases.
5. Menstruation.
6. Poisons (alcohol, morphine and lead).
7. Psychoneurosis.
8. Nephritis.
9. Focal infections.
10. Sinusitis.
11. Meningitis.
12. Trigemenial neuralgia, 5th nerve.
13. Indurative.
14. Migraine.
15. Brain tumors.
16. Syphilitic bone lesions.
17. Unknown causes.

It will be well to give a brief discussion of the above named causes. We will suppose that the chief complaint presented by the patient is the symptom in question.

1. Fatigue, hunger and bad air often produce headache which is undoubtedly due to the circulation of fatigue poisons. Its cause is obvious by its disappearance, after rest, food and fresh air.

2. Constipation and indigestion. Here the patient can usually make the diagnosis himself by the fact that the headache very often disappears at once after defecation. This is hard to reconcile with any chemical theory, which nevertheless is most probably an instrumental factor.

3. Eye strain and intrinsic diseases of the eye are frequent causes of headaches and the one that is too often given little or no consideration by the general practitioner.

Headaches eminating from the eye can easily be recognized when we find the eye inflammed, weeping, photophobic or sensitive to pressure. But often the objective changes in the eye are slight, in fact they may be actually absent at the time of the examination. This is practically the case in prodromal glaucoma. The headaches, the patient says, came on less frequently at first; afterwards more and more

often; in summer he is almost free from them, in the winter suffers much more often. The pain usually comes on in the afternoon or evening and ceases in deep sleep, it is often produced by excitement. Such a history of headache accompanied by slight blurring of vision and an eye that is hypermetropic with a strikingly shallow anterior chamber and perhaps pulsation in the retinal artery is surely "glaucoma."

Ocular headaches, in which there is nothing to be seen in the eye externally, originate in eye strain or refractive errors, in anomalies of accommodation and in disturbances of muscle equilibrium, especially latent divergence. These headaches are prolonged exertion of the eyes and hence are never present upon waking in the morning. For the same reason they do not exist in small children, but occur first at an age when greater demands are made upon the eyes. To these statements there are some exceptions but they convey what we find in the vast majority of such cases.

4. Onset of infectious diseases often have headache as the most prominent symptom however other symptoms and findings always accompany, thus giving a point for differentiation.

5. Menstruation is often preceded or followed by, less often accompanied by headache, the exact origin of which is very obscure. A simple history will usually bring out the cause.

6. Poisons such as alcohol, morphine and lead may also be considered. Except after a drinking bout, it is very rare to have a patient complain chiefly of headache after any of these poisons. Other symptoms usually occupy the foreground.

7. Psychoneurosis or neurotics may present any type of headache and is one of our most difficult to differentiate until we become thoroughly acquainted with the patient.

8. Nephritis often presents headache as a chief symptom. It is most often of a general and constant type. Often no other symptom is noticed by the patient and therefore the disease is frequently overlooked if there is not a complete examination.

9. Focal infections may cause headache as a predominating symptom, but most always other symptoms are more prominent.

10. Sinusitis is frequently overlooked because it presents headache as a lone symptom. The location of the pain is usually over the affected cavity and the time of appearance and disappearance is very uniform from day to day.

11. Meningitis causes dull occipital and constant headaches which increases in severity as the disease progresses.

12. Trigeminal neuralgia with or without the paroxysms or spasms, presents, as a rule, no serious difficulty in diagnosis, therefore will not be mentioned further.

13. Induritive headache is a very frequent form and does not seem to be familiar to most physicians although it has been described in text-books for years. In the older books it is referred to as rheumatic headache. Its principal feature is the presence of painful areas about the insertion of the muscles at the back of the head. The muscle becomes nodular, sensitive and uneven. Pain in the back of the head is often wrongly accused to the eyes.

14. Migraine presents a headache as the only symptom, in most cases. It is periodical and almost invariably unilateral in the temple region or on top of the head. It is most common in women and the spells are less frequent as age increases. It is looked upon as a vascular disturbance.

15. Brain tumors cause a constant headache which grows worse as the tumor enlarges, other symptoms sooner or later present themselves and enable a differentiation.

16. Syphilitic lesions of the bone of the skull cause headaches which are located over the affected area and are usually most severe in the night.

17. Headaches due to unknown causes comprise too great a number of our cases. Closer observation and study of the cases will greatly diminish this group.

As you notice in the foregoing discussion, I have said very little regarding the position and nature of the headaches caused by the different affections. Some authors map out the skull's surface with special headache areas, but the actual experience of the leading men in the profession brings out that there is not often much to be learned from the position of a headache. Ocular headaches often begin or

center near the eyes; pain due to ear disease often spreads from an initial focus near the ear. Inflammations of the antrum and frontal sinus cause pain over the affected cavity. The pain of syphilitic bone lesions corresponds to the position of the lesion. Migraine with its unilateral distribution and trigeminal neuralgia has also a typical distribution.

On the other hand, eye or ear headaches are not often thus localized and the pain due to any of the other familiar causes as infection, constipation, menstruation or brain tumor may be in any part of the head, and is often unilateral so as to be mistaken with migraine.

The kind of pain is likewise of little or no significance for the various types may be encountered in all sorts of diseases.

The severity of a headache is probably greatest in organic diseases of the brain.

Chronic headaches often lifelong are associated with neurasthenia, hysteria, etc., and are often present without any discoverable cause.

Bearing in mind what has been mentioned we are attracted to the fact that some headaches are very difficult, at times, to distinguish from those caused by the eyes. I shall mention the most important ones.

"Neurasthenics." When they use their eyes they have pain which is located sometimes in the lids, sometimes in the eyes themselves, or behind or in the head. The discomfort often sets in, within a few minutes, while the disorder of refraction or of muscles does not set in until after a rather prolonged exertion of the eyes.

Migraine headache is often referred to the eyes. It is violent, boring and situated over the eyes in the temple region. But sometimes in the eye itself. The attacks are often introduced by disturbance in vision (scintillating scatoma); during the attack the patient feels best if he can lie quiet in a darkened room; glaring lights pain him; there is a sort of photophobia. All these circumstances may cause the patient to believe that his eye is affected. In distinction from the headaches that really eminate from the eye, the migraine attacks show quite a typical course. They recur at certain intervals usually not more often then twice a month, last one-half to a whole day, sometimes ending in nausea and vomiting. In a person who suffers from migraine, a true attack can be set up by straining the eyes, just as it can by any other injurious influence.

Frontal sinus involvement causes frontal headache which is not particularly violent, but is more or less a dull pressure. On the other hand, upon closure of the drainage duct and accumulation of the secretion, very violent, boring and hammering pain sets in. The pain shows a periodical increase and is worse in the morning and sometimes it increases when the head is bent forward. There is increased pain to pressure or precussion on the supra-orbital ridge. There is a history of frequent colds.

Supra-orbital neuralgia has its localization in the forehead. Its recurring in attacks shares with migraine, and the supra-orbital location shares with the frontal sinus infection. During the attack the eye of the affected side often is less wide open and weeps, and is even slightly injected, thus often exciting a suspicion of eye trouble. The pain is violent and the supra-orbital nerve is very sensitive to touch. The attacks are very sudden in onset.

Headaches of a persistent character as due to nephritis and uraemia or to increased brain pressure such as brain tumors, meningitis, etc., are usually accompanied by vomiting. A patient who complains of frequent headaches, the examination of the urine for albumin and of the eyes for changes at the optic entrance should never be neglected. The latter changes may last a long time without there being any interference with sight. Young persons are often brought in for eye examination, because of headaches, which are thought to be due to eye-strain caused by study, but no eye trouble can be found. Some of these cases are no doubt habitual, however, I believe that no small per cent are due to focal infection in the teeth or tonsils and possibly anemia.

To aid in differentiating puzzling cases the following important tests should be gone through:

1. Thorough examination of the eyes, including retinoscopy and testing intra-ocular tension.
2. Examination of the ears, nose and throat.
3. Blood pressure.

4. Complete examination of the urine.

5. Palpatation of the insertion of muscles of the neck.

6. In the history the following points should be observed: Is the headache

a. Paroxysmal or constant?

b. Accompanied by visual disturbance?

c. Of great prostration?

d. At precisely the same hour each day?

I have herein tried to give briefly the important points about the subject and if most of them are kept in mind when a case presents itself, there will be less difficulty making a differentiation of the causes and thus determining whether it is or is not due to eye trouble.

The outstanding point to eye men is, "That for a thorough examination and complete differentiation of headaches, the eyes should be examined in each case."

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ACCOMMODATION

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Minneapolis, Minn.

Scientific research does not consist so much in originality of thought as in the painstaking computation of facts and in the analysis of preceding theories. Helmholtz did not claim originality in all of his experiments, but by a different intrepretation of those of his predecessors combined with his own, he evolved a theory of accommodation which has become generally accepted throughout the scientific world. When Thomas Young performed his immersed cornea experiment, he was 50 years ahead of his time and while he disproved that accommodation was produced by a change in curvature of the cornea he failed to evolve the right theory due to the lack of anatomical knowledge at that time. A similar condition caused the Helmholtz theory to be disputed and it is only of late that an explanation has been offered, that, if correct, will remove Tscherning's objections.

According to the Helmholtz theory, the ciliary processes are elastic tissues holding the lens peripherally in a flat or static position. The ciliary muscle on contracting pulls forward and downward the ciliary processes, thus releasing the tension on the Zone of Zinn and permitting the lens to assume greater convexity by reason of its own resiliency. As was found by others and confirmed by Helmholtz, the change of curvature occurring in the posterior surface of the lens during accommodation is negligible while the change in the anterior surface is greater at the center than at the periphery. The theory of hydrostatic pressure of Cramer and Donders as an explanation of this latter change was not satisfactory to Helmholtz as he thought that this would have a tendency to cause the whole lens to become thinner. But he observed that the iris bulged forward and that the radius of curvature of the anterior surface decreased approximately 5mm while the posterior surface movement and increase in curvature were negligible. The mobility of the lens when under great strain of accommodation also proved that the front and rear pressures of the eye fluids are equal.

As an explanation Helmholtz suggests that the zonule being formed of elastic tissue holds the lens in an equatorial state of expansion and that the ciliary muscle, by a forward pull of the posterior part of the zonule, relaxes it and permits the lens to assume more convexity. As the iris pressure against the capsule is greater at the periphery than at the center, the front surface will become more convex at the center and the posterior surface flatter, back to approximately its original position. Tscherning's objection to that theory was that he could not see how the accommodative mechanism as described by Helmholtz could produce a flattening of certain parts of

the lens and at the same time an increase of curvature in others. Tscherning assumed that the point of solid attachment of the ciliary muscle is at the posterior extremity and that by a direct pull up and back on the Zonula of Zinn the lens was accommodated; as the vitreous is incompressible the front surface assumed greater convexity at the center than at the periphery, while the posterior surface did not materially change. According to Gullstrand this hypothesis is untenable and based on a false assumption.

Both theories are not invulnerable as it would seem just as improbable that either a traction or a relaxation of the Zone of Zinn would produce an anterior lenticonus.

In the transactions of the British Optical Society, 1924-1925, appeared a communication by E. F. Fincham upon "The Change in the Form of the Crystalline Lens During Accommodation." The author's experiments and conclusions lend support to the Helmholtz theory and will be here briefly mentioned.

After describing various observations as made with a combination slit lamp and binocular microscope, Fincham calls our attention to a little known remark of Bowman's, that the lens capsule varies in thickness. The point of greatest thickness of the anterior surface is in a zone 3mm from the pole while the posterior surface is thin over its greater part and reaches its maximum thickness at the equator of the lens. These variations in thickness in the capsule coincide with the variations in curvature of the lens, and this coupled with the well known elasticity of the capsule form the basis of Fincham's statement.

Fincham made a working model of the lens capsule, in rubber, with thicknesses varying similarly. It was found that upon releasing the tension on tapes suspending the lens peripherally the rubber capsule assumed a shape similar to that of the human lens. His conclusion is that in the act of accommodation the capsule is distended by the lens substance and that this distention is greatest where the capsule is weakest.

This removes Tscherning's objections to the Helmholtz theory and corroborates it in so far as the extracapsular mechanism of accommodation is concerned. Fincham is to be congratulated upon his valuable addition to the field of physiologic optics.

PRACTICAL NOTES AND CURRENT REFRACTIVE TOPICS

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VERTICAL CENTERING

We do not give enough attention to the vertical positions of the optical centers of the lenses in the glasses we prescribe. Particularly in plus corrections, if the centers are a bit too high or a little too low, much discomfort can be caused. We must always bear in mind, in every step of our work, that a lens is an aggregation of prisms. In the plus spheres, the prism bases are in apposition at the optical center of the lens, in fact, it is this coming together of the prism bases at a central point that makes the optical center. In plus cylinders, the prism bases form a line which is the axis of the cylinder.

If the lenses are so set in front of the eyes that the wearer looks below the optical center of a plus lens, the effect of a pair of prisms base up is produced. This makes the ground or floor seem farther away than it really is, the person seems to himself or herself to have suddenly grown very tall. I remember one instance where the prescription was O.U. +0.25 cyl. ax. 180. The dispensing optician had made two pairs of glasses, one being eyeglasses with the optical centers in their correct vertical position, the other being shell spectacles with a low bridge that lifted the lens centers above the center of the pupil. The owner of these two pairs of glasses told me that with the spectacles she felt "as tall as a giantess." By changing the frame, using a higher bridge, the trouble was eliminated.

The optical centers should, as a rule, come just opposite the outer canthus. Or, another good point of reference is the lower margin of the iris. But in using the iris as such a point, we have to be sure that the eyes are in their primary position, the position in which they are held when the person is walking. As this is rather difficult to surely determine, it is better to use the outer canthus as the guide.

Some attention should be given to the individual's posture. If the wearer is inclined to walk with the head forward, the shoulders a little drooped, the centers can be set rather higher than in the case of the man who walks with shoulders squared, head back, chin up. This type of individual should be fitted with the centers quite low.

We naturally, in looking ahead while walking, cast the eyes very slightly downward, so that the visual axes form an acute angle with the ground. The usual point of regard is on the ground anywhere from 50 to 100 feet ahead of us. Of course, this will vary with different people, and, more or less, at different times with the same person. The optical centers of lenses should be adjusted so that they are just a little below the line of vision when the person is looking at an object on the same level as the eyes, and then he will look through the optical centers, or pretty close to them, when he is walking.

It is better to get the centers a little too low than a little too high. The wearer will suffer less annoyance.

We see more shell and zylonite spectacles betraying this carelessness in adjustment than rimless or metal-rimmed glasses. This is quite natural, for we have to consider many points in fitting a shell frame that do not enter into the fitting of rimless glasses at all. On account of the round lenses, and their disposition to touch the cheeks, a low bridge often must be used. When this is necessary, if the mechanical centers are found to be above the level of the outer canthus, decenter the lenses down in compensation. Don't be afraid to decenter lenses.

It is by attention to these seemingly minor points that we win the confidence and gratitude of our clients. They may not know of all the details that enter into our fittings, in fact, they don't care to know. But they do appreciate a "careful man" when they find him. "The Painfull Man," to revive an old English word, meaning "One who takes great pains," will render a not inconsiderable service to his patients by heeding this one point, the proper vertical placing of the optical center.

PHYSIOLOGICAL EXOPHORIA

Some years ago, someone, I don't know who, discovered that usually there is present at the reading point an average of about 4 degrees more exophoria than at distance. A great many others were thereby made sufficiently curious to make similar tests and found that it was even so. Then some of them got dreadfully excited about it, so much so that they thought they ought to give this phenomenon a special name. Out of their labor was born this term, "Physiological Exophoria." I have never been able to find an authoritative definition for physiological exophoria, but I have somehow gained the impression that it means the difference between the distance phoria and the reading point phoria, when the latter shows more exophoria than the distance. Then, if at distance we find 2 degrees of esophoria, and at near 2 degrees of exophoria, the physiological exophoria is 4 degrees. Or, with this 2 degrees of esophoria at distance, a finding of orthophoria at the reading point would prove the existence of 2 degrees of physiological exophoria. Or, with orthophoria at distance and 3 degrees of exophoria at near, we have 3 degrees of physiological exophoria, and so on.

Now that is all very well. But behold what happens! Since investigators have found that the average physiological exophoria is about 4 degrees, some thoughtless wights arise to claim that this is "normal," and that any other amount is indicative of abnormality and must receive special attention. Further, instead of viewing this near point exophoria in comparison with the distance phoria, they misinterpret the columns of figures presented by the original investigators, and establish a flat "normal" of 4 degrees exophoria at the reading distance. There they lose sight of the only reason the term "Physiological Exophoria" has for existence, that is, that it shall de-

note the difference between the distance and near phorias. With this sense, the term has a useful meaning. As an expression denoting the amount of reading point exophoria, it is meaningless and useless. For the amount is better expressed by our old term, "Accommodative Exophoria." In analyzing a case, it is often useful to compare the distance and near phorias, and to determine if this difference is due to exhaustion or to the improper or but partially educated innervational habits of the individual. As a physiological phenomenon, indicating incompleted evolution, the vestige of the non-converging habits of our primordial ancestors, this difference is lucidly defined by the term "Physiological Exophoria."

As a synonym for "Accommodative Exophoria," as we often see it used, the term "Physiological Exophoria" is useless, for there is no sense in coining a new term to define what is aptly described by an expression already in common use. And as describing accommodative exophoria, the term "Physiological Exophoria" is a misnomer and decidedly misleading. For accommodative exophoria indicates that the associated accommodative-convergence impulse is insufficient to bring about fusion. That is, the innervation that suffices to focus a clear image on the retina is insufficient to overcome the exophoria and accomplish fusion. Whether this exophoria is structurally so great that more proportionate innervation for convergence is required than for accommodation, or whether in the individual there is not a close association of convergence and accommodation, is beside the point. The point is that there is a residual exophoria still to be cared for after the associated accommodative-convergence innervational impulse has reached its climax. This residual exophoria is well termed "Accommodative."

Then, on top of misusing the term, with a carelessness of thought that is not to be extenuated, some have gone to the extreme of saying that, since there is an average of 4 degrees of exophoria (denominate it as you will), hence everyone ought to have 4 degrees of exophoria at the reading point. So test cards are produced setting "zero" at 4 degrees of exophoria, instead of "zero" at orthophoria. And these teach that if the addition of plus lenses for reading change an orthophoria or a low exophoria to 4 degrees of exophoria, that all is well. Or, if 4 degrees of exophoria at the reading point is found with the glasses on, it makes no difference what the exophoria was before the glasses were fitted. My quarrel with this teaching is that we cannot force the individual to meet the average. The average is only good for statistical purposes. It cannot be applied to the individual in his mental or physical processes. The man who is not of the average height, who does not wear the average size collar, hat or shoes, is not therefore abnormal. You cannot force all human feet into number six shoes, nor can you, with impunity, force every pair of eyes into a position of 4 degrees of exophoria at the reading point. There is at least one test chart offered for sale on which 6 degrees of exophoria at the near point is indicated as the normal, or zero. That's making the matter still worse.

Perhaps some of this misunderstanding has arisen from the thought that a finding of accommodative, or, if you wish, physiological exophoria, is an indication of muscular imbalance. But neither accommodative exophoria nor physiological exophoria, in the meanings I have here ascribed to them, is indicative in any sense of binocular imbalance. Nor is a finding of accommodative orthophoria a proof of binocular balance. For balance is a matter of the fusional sense, and if this be highly developed, no exophoria in itself can cause an imbalance, neither can accommodative orthophoria fill all the requirements of balance. Balance is a matter of innervational adjustments, it rests not in the amount or kind of heterophoria.

Let us, in our seeking for technical terms, in describing various phenomena making up a case history, seek those terms that describe exactly and lucidly our findings. We have too many terms used synonymously that are not synonyms. We are altogether too loose and vague in our terminology. Words and terms are coined to use as vehicles for the transmission of our thought. If we select the wrong term, our thought is not surely conveyed. If, as a profession, we are careless and slovenly in our use of technical terms,

our mental and professional growth is thereby handicapped. Let us not use high sounding phrases without making sure that these phrases are technically and descriptively correct.

BIFOCALS FOR MYOPES

An opinion seems to have gained currency in certain quarters that myopes cannot wear ordinary bifocals because of the strong prism base down effect in the segments. This idea seems to receive more credence among the oculists than among the optometrists, perhaps because the latter are, with their wider practical experience, less apt to be led astray by specious theories.

It is quite true that in the ordinary bifocal with a strong minus distance correction the optical center of the reading part is outside the lens limits. Therefore, theoretically, the segment should be made with the prism base up to neutralize the strong base down of the main lens. But when we come into actual practice, the myope is already accustomed to a strong base down effect, and few of us have any records showing that the comparatively slight additional prism of the segment has even been noticed by the wearer.

We can even go further, and state that the prism base down in the reading portion is a decided help to the myope. For many myopes need a repressive agent to counteract their tendency to over-convergence, and this is furnished by the prism base down of the usual segment.

There is one point about adjusting bifocals for myopes, which is that the top of the wafer should be set lower than for hyperopes. Personally, the only bifocal troubles I have had with myopes occurred when I had adjusted the segments too high. After they were lowered, all complaints ceased. As a rule, myopes take very kindly to bifocals..

CROWDING ON THE PLUS

Too much insistence is put on forcing the patient to accept all the plus possible. Only in accommodative esophoria is this advisable, and even then there are limits.

If plus lenses, in repressing the accommodation, can rid us of a troublesome accommodative esophoria by indirectly attacking the convergence through the accommodation, they can also make trouble by this same indirect repression in cases of convergence insufficiencies. If convergence response is slow or difficult, full plus corrections will tend to add to that difficulty. So one of the determining factors in deciding the amount of plus to be given must be the result of the adduction tests. A high adduction would indicate that there might be some possibility of the patient's accepting a full correction, but a low adduction would surely state in undeniable language that a correction so strong that accommodation is repressed would be unbearable.

Further, a plus correction that would change an accommodative orthophoria to accommodative exophoria, or that would increase an already existing accommodative exophoria, would prove decidedly disadvantageous. It is my opinion, based on the complaints of many individuals who proved to be so far over-corrected that a lifetime's visual habits were interfered with, that there is a greater percentage of over plus corrections than of under plus corrections, that the general tendency among both oculists and optometrists is to prescribe too much plus.

Snellen test types afford no criterion as to when the ideal correction has been reached. These appeal only to form-sense, they tell nothing of the appreciation of detail nor of the distinctions in gradients of light and shade. And sharp vision is as much a matter of these latter as it is of form-sense. Test letters may remain clear and yet the individual's constructive recognition of detail be destroyed. Our test charts are flat surfaces, but our every day working visual sense, concerns itself with viewing objects in relief and judging them by that relief. The individual's visual habits are the result of his individual experiences, a series of reflexes and co-ordinations has been built up with which we may not safely tamper. When we repress the accommodation and thus change an habitual accommodative orthophoria to accommodative exophoria, or increase an accommodative exophoria, we have tampered with these reflexes and interfered with those mental or nervous processes by which his sense of detail and stereopsis functions.

The effect of the correcting lenses on the phoria must be noted. The critical point, that point beyond which we may not pass, is that at which an already existing accommodative orthophoria or exophoria can no longer be maintained. In esophoria, we must step in and render assistance to his efforts in dissociating accommodation from convergence, in a certain type of myopia we may go so far as to compel dissociation, but in no other type of structural or physiological error dare we thus interfere.

VISUAL TESTS FOR MOTORISTS

The enthusiastic endorsers of compulsory visual acuity tests for applicants for driving licenses are doomed to considerable dampening of ardor. For visual acuity and field of vision tests made on those involved in automobile road accidents show that a very small, an unexpectedly small, percentage of these accidents can be traced either directly or indirectly to poor vision. The percentage is so small that authorities do not feel it of sufficient importance to require the enactment of special laws.

The practical result of this finding is to clear the way for the really important test, that of the individual's visual reflexes. As to how sharp or clear a man's vision is, fades into relative unimportance beside the question of what he does and how he acts when he is confronted with a spectacle calling for quick and wise action.

It would perhaps be of interest if, in addition to taking the macular vision, the field of indirect vision and the color sense of those motorists involved in accidents, the phoria and duction tests had likewise been made. Is the average man with accommodative esophoria a good judge of speed and distance? What per cent of these motorists were afflicted, unknown to themselves, with the habit of suspenopsia? Is the man with slow responsiveness in the duction tests likewise slow in visual reflexes when he is behind the steering wheel? These and other similar questions might be of greater import than mere visual tests.

Apropos of this, if optometry should take up the matter of visual reflexes as one of the problems connected with motoring, and after we have charted out the path, are we going to sit by with folded hands while organized medicine seizes our ammunition? We have done this in two matters within the last five years. It was optometrists who recognized the value of visual tests in industry, and it was optometrists who instituted this work and awakened factory owners to its importance. Then they let the medical men, with their stronger organization, step in and filch the plum. It was optometrists who started the campaign for visual tests of motorists, it was optometrists who persuaded the state authorities to make even such visual tests as have been made. Now we are letting the ophthalmologists step in and enact laws favoring themselves, ousting optometrists, requiring certification of vision from an ophthalmologist, establishing boards consisting of "two surgeons and one ophthalmologist." It is high time that we quit quarreling over who shall be the president of the A. O. A., and direct our surplus energy to putting optometry and optometrists on the map.

THE MADDOX ROD

Optometrists, who do not use atropine and doubt its practical usefulness in refraction, should remember that the Maddox Rod is essentially a test to be used with atropine. Maddox himself pointed out that in the accommodative phoria test, the Maddox Rod shows less accommodative esophoria than the fact. Following this statement out to its logical conclusion, then with the Maddox Rod we should expect to find a higher degree of accommodative exophoria than the true amount, and that true accommodative orthophoria would appear as a slight exophoria.

But with the accommodation entirely suspended, the Maddox Rod tests would show the phoria as it exists before the accommodative-convergence innervational impulse acts. This information might be of value occasionally, but it is of no value in analyzing the dynamic activities of a pair of eyes. The essential information we require is the position of the eyes at the end of the associated accommodative-convergence impulse.

Here and there we meet among the more progressive optometrists a few who have realized that the Maddox Rod is valueless to us in our routine work, and these have discarded the test, substituting Savage's dynamic test with vertical displacing prisms.

SPECIAL REPORTS

LEGISLATION FOR BRITISH OPTOMETRISTS

Believing it to be of interest to optometrists in America, we are reproducing a copy of a Sight-Testing Opticians' Bill which, it is hoped, will shortly be placed before the British Parliament. For years the optometrists, or rather, the sight-testing opticians, of England have been clamoring for such legislation but because of personal jealousies and other inner-society difficulties not much progress has been made.

A crisis has now arisen in the lives of these British eye specialists, in as much as the government ophthalmic benefits are almost sure to go to the ophthalmologists unless these men put forth a united front.

Things, towards this end, in England, are now looking up, and we here in America are very hopeful that before another year our British cousins will be safely on the road to professional optometry behind the sheltering bulwark of the British law.

The proposed bill is given here in full with the exception of Section 7. This section deals with the selection of the board and there are now several proposals being considered. The bill in many respects resembles statutes now in force in the United States as well as in Canada and it would seem to cover the profession's needs nicely. The only point at which we can see any weakness in this proposed act is in Section 9, Clause 1, Paragraphs (h) and (i). These relate to the scholastic training required by the student optometrist and to the examination given by the board, before granting a certificate. We in America have found it easier to pass laws of this kind if the educational requirements are set forth in the fullest extent possible and the entire character of the examination fully explained and prescribed.

It is well to remember that law-makers are in most cases not professional men and we believe it a good piece of psychology to list in the bill the numerous subjects to be studied by the student and later to be examined upon, as it gives the law-makers a more detailed view of the importance of proper eye work and thus the importance of the law itself.

The copy of this act was taken from the October 16th, 1925, issue of **The Optician.**—Editor, American Journal of Optometry.

A BILL ENTITLED

AN ACT TO REGULATE THE PRACTICE OF OPTICIANS AS REGARDS THE TESTING OF SIGHT.

Be it enacted by the King's Most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

Short Title.

1. This Act may for all purposes be cited as the Sight-testing Opticians Act, 1926.

Interpretation.

2. In this Act—

"Sight-testing" or "Testing sight," and the practice of sight-testing and testing sight, means the science of measuring the refraction of the eye and the adaptation of lenses for aiding defective sight, and the practice of the said science;

"Sight-testing optician" means a person registered under this Act;

"The Central Board" means the Board of Optical Registration as constituted by this Act.

"The registrar" means the registrar to be appointed by the Central Board;

"The appointed day" means the first of June, one thousand nine hundred and twenty-six, or such other day in June one thousand nine hundred and twenty-six, as may be appointed by the Central Board.

"Elected members" means persons elected under Section 7 to the Central Board.

Act Not to Apply to Medical Practitioners.

3. The provisions of this Act shall not apply to any legally qualified medical practitioner.

Registration Not to Imply Medical Qualification, Etc.

4. Registration under this Act shall not confer upon any person any right or title to be registered under the Medical Acts, or to assume any name, title, or designation implying that he is by law recognized as a medical practitioner, or that he is qualified to practice ophthalmic medicine or surgery.

Provisions as to Register of Sight-testing Opticians.

5. Subject to the provisions of this Act—

(1) Any person who practises and has bona fide continuously for not less than six months next before the passing of this Act practised on his own account sight-testing or the testing of sight, or who as an assistant being over the age of twenty-one years bona fide continuously for not less than three years practised sight-testing or the testing of sight, shall be entitled to be registered under this Act, provided he applies for registration within one year from the passing of this Act, and produces to the Central Board such evidence of his qualification for registration as they may reasonably require;

(2) Any person who after the passing of this Act shall pass the examination in sight-testing required by the Central Board or such other examination as may from time to time be approved by the Central Board shall be entitled to be registered under this Act, provided he has duly complied with the rules and requirements of the Central Board.

The Central Board shall be bound to hold or authorize and approve the holding of examinations for the purpose of testing the fitness of persons to practise as sight-testing opticians who may be desirous of so being examined from time to time, and at least once in every year so long as the examinations shall be approved by the Central Board.

No Person to Be Registered Unless Provisions of Act Complied With.

6. (1) No person shall be registered under this Act until he has complied with the rules and regulations to be laid down by the Central Board from time to time in pursuance of this Act.

Registered Persons May Practise, Unregistered May Not Recover Fees.

(2) A person registered under this Act shall be entitled to practise sight-testing in any part of His Majesty's Dominions subject to any local law in force in that part, and from and after the appointed day no person shall be entitled to recover any fee or charge in any court for giving any attendance or advice or acting in any manner as a sight-testing optician unless he be registered under this Act.

Persons Not to Assume Title Implying Registration.

(3) On and after the appointed day any person who not being registered under this Act shall take or use the name or title of "sight-testing optician" (either alone or in combination with any other word or words), or such other name or title as may be prescribed by the rules under this Act to designate sight-testing opticians, or shall take or use any name, title, designation, addition, or description, whether by means of initials or letters placed after his name, or otherwise implying that he is registered under this Act, or that he is a person specially qualified to practise sight-testing or testing sight, shall be liable on summary conviction to a penalty not exceeding twenty pounds.

Constitution of Central Board.

7. (This, which has proved in the past to be the most markedly controversial section of an Opticians Bill, is omitted for the present.)

Qualification and Election of Direct Representatives.

8. (1) The members of the Central Board representing the members of the register (in this Act referred to as "direct representatives") shall themselves be registered under this Act, but the proceedings of the Central Board shall not be questioned on account of a vacancy or vacancies among the direct representatives.

(2) The Chairman of the Central Board or any other person whom the Central Board may from time to time appoint shall be the returning officer for the purpose of elections of direct representatives and such returning officer shall some time not less than

six weeks nor more than two months before the day on which the term of office of any other representative will expire and as soon as conveniently may be after the occurrence of any vacancy arising from the death or resignation of any such representative issue his precept requiring the members of the register to cause a representative to be elected by the members of the register within twenty-one days after the receipt of the precept of the returning officer.

(3) The election shall be conducted in such manner as may be provided by regulations to be made by the Privy Council provided as follows:

(a) The nomination shall be in writing and the nomination paper of each candidate shall be signed by not fewer than six members of the register; and

(b) The election shall be conducted by voting papers and it shall be the duty of the Central Board to cause a voting paper to be forwarded by post to each of the members of the register, but the election shall not be rendered void by reason of the omission to cause such voting paper to be forwarded in any particular case or cases and any member of the register to whom a voting paper has not been sent in pursuance of this Act may on application to the Secretary to the Central Board obtain one from him; and

(c) Any member of the register entitled to vote at such election may vote for as many candidates as there are representatives to be elected.

(4) A direct representative elected in place of any such representative retiring on the expiration of the period for which he was elected shall come into office at the expiration of that period and a direct representative elected to fill a vacancy caused by the death or resignation of any representative shall come into office on the day on which he is certified by the returning officer to have been elected.

(5) The expenses attending the election of a direct representative shall be defrayed as part of the expenses of the Central Board.

(6) For the purpose of the first election of direct representatives the returning officer shall on the first day of April one thousand nine hundred and twenty-seven issue this precept to the members of the register requiring them to cause the proper number of representatives to be elected within twenty-one days after the receipt of the said precept and the said representatives shall come into office on the first day of May one thousand nine hundred and twenty-seven.

(To Be Continued)

REFRACTIVE COUNSEL

Dr. R. M. Peckham, Optometrist, of 111 Bank Street, Waterbury, Conn., will answer in these columns questions regarding difficult refractive cases. Our readers are requested to send him full particulars of each case, which will be published along with the reader's initials only. These questions and answers will appear monthly. Also in this department Dr. Peckham would like to receive the accounts of unusual cases which have been satisfactorily handled, which will be published, if accepted, over the practitioner's name.

FIVE CASE REPORTS ILLUSTRATING THE VALUE OF MECHANICAL RELAXATION AS COMPARED WITH THE USE OF ATROPINE.

These case reports are taken from the files of Dr. Oscar L. McCulloch, Holyoke, Mass., and of Dr. R. M. Peckham, Waterbury, Conn. These are typical of a large number of similar cases successfully handled by relaxation of the accommodation by the use of prisms base in, the disclosure of the latent exophoria and its correction, with the consequent revelation of the true hyperopic defect.

These cases have several features in common. All had been refracted under cyclopegic, with failure to either learn the full error or to give ocular comfort. The reader will note the false amount of astigmatism and the wrong cylinders found under atropine in several of these cases. These records prove that atropine will not relax the accommodation in cases where there is a close association between accommodation and convergence, and it is these types that yield us the most complicated and stubborn cases with which we have to contend.

The procedure is the correction of

any apparent exophoria at the near point, the full correction of the near point requirement and the prescribing of prisms if the full plus correction increases the manifest exophoria. (R. M. P.)

Case 1. Miss C., age 31. Occupation, silk spinner, demanding constant attention to very fine work. Suffers terrific headaches. Wearing O.D., +0.50 D. cyl. axis 30, O.S., +0.50 D. cyl. axis 150, fitted under atropine.

Six degrees of exophoria at the working distance. Correcting this with 3 degree prism base in over each eye, there was revealed a latent hyperopia of +1.50 D., O.U. Torsion disappeared, and the cylinder axes reverted to their normal position, in both eyes, cyl. +0.50 axis 180. Rx., distance +0.50 D. cyl. axis 180, add for near +1.50 D. sph. () 3 degree prism base in.

One week later the patient called voluntarily to report that headaches had ceased entirely, and that "glasses were fine." (O. L. McC.)

Case 2. Miss H. Wearing O.U. +1.00 D. sph. () +0.25 D. cyl. axis 90. Fitted under atropine, and were intolerable. Two previous prescriptions, both fitted under atropine, were, first, O.U., +0.50 D. cyl. axis 90; second, O.U. +0.50 D. sph. () +0.25 D. cyl. axis 90.

Ophthalmometer findings, O.D. 1.25 D. cyl. with the rule, axis at 90; O.S., 2.00 D. cyl. with the rule, axis at 100.

One degree of exophoria at 35 cm. Correcting this with 0.50 degree prism base in, reading correction is, O. D., +0.75 D. cyl. axis 90; O.S., +1.25 D. cyl. axis 90. Deduct 1.00 D. sph. for clear distance vision. Rx., temporary, distance, O.D., —1.00 D. sph. () +0.75 D. cyl. axis 90; O.S., —1.00 D. sph. () +1.25 D. cyl. axis 90. Add O.U., +1.00 D. sph. () 0.50 degree prism base in; in bifocals.

Three weeks later the final prescription was given, being distance and reading, O.D., +0.25 D. sph. () +0.75 D. cyl. axis 90 () 1.50 degree prism base in; O.S., +1.25 D. cyl. axis 90 () 1.50 degree prism base in. (O. L. McC.)

Case 3. Mr. P., age 35. Bookkeeper. Had worn for several years, for near work only, O.U. +1.25 D. sph. () +0.50 D. cyl. axis 90. Complained of eyes itching, smarting, etc. Blepharitis, very pronounced. Chronic headache and chronic dyspepsia. Two degrees of esophoria at distance, 1 degree at near.

Two degrees prism base in over each eye revealed following requirement for near work: O.D., +2.25 D. sph. () +0.50 D. cyl. axis 90; O.S., +1.75 D. sph. () +1.25 D. cyl. axis 90; deduct from distance vision, O.U., +1.50 D. sph. Rx., bifocals; O.D., +0.75 D. sph. () +0.50 D. cyl. axis 90; O.S., 90; add, O.U., +1.50 D. sph. () 2 +0.25 D. sph. () +1.25 D. cyl. axis degrees prism base in. Without the prisms base in at the reading point, 4 degrees of exophoria was developed, hence, these prismatic segments are essential.

Headaches, indigestion, blepharitis, all cured. (O. L. McC.)

Case 4. Mrs. H., age 24. Has a great number of old glasses and prescriptions, some fitted under atropine, some without. Intolerable headaches. Impossible to do any sewing or reading. Wearing O. U., +1.50 D. cyl. () +0.25 D. cyl. axis 180. Fitted under atropine, by an oculist who remarked, "There is a muscle trouble." Same prescription confirmed by a second oculist who stated that this correction was the full finding under the cyclopegic, no deduction being made, and that the headaches proceeded from some other cause than eye-strain.

With this Rx. there was, 4 degrees of esophoria at distance, 4 degrees of exophoria at near. Ophthalmometer readings, 0.50 D. of corneal astigmatism with the rule, both eyes.

Correcting the near exophoria, we find the reading requirement is +2.50 D. sph. () 2 degree prism base in. Made up as near work spectacles, with directions to call in two weeks.

Two weeks later: Distance O.U., +2.50 D. sph., add for reading +1.00 D. sph. () 1.00 degree prism base in, in bifocals. This reduced the frequency and severity of the headaches.

Four months later: Distance, +3.00 D. sph., add +1.00 D. sph.

Two weeks later: Distance and reading, +3.50 D. sph.

Three months later: Distance and reading, O.U., +4.00 D. sph. () +3.50 degree prism base in.

One week later: Distance and reading, +4.50 D. sph. Accommodative

orthophoria, for the first time, at both distance and reading.

Nearly a year has passed without recurrence of headache. (R. M. P.)

Case 5. Miss E. Stenographer. Complains of "slowness in focussing," and frequent headache. Wearing O.D., +0.25 D. cyl. axis 90; O.S., +0.50 D. cyl. axis 90. Distance, 2 degrees of esophoria; near, 4 degrees of exophoria.

With 2 degree prism base in over each eye, correction for both distance and near: O.D., +1.25 D. cyl. axis 90; O.S., +2.00 D. cyl. axis 90. Without prisms, and with these cylinders, distance exophoria, 4 degrees; near exophoria, 8 degrees. With the prisms: Distance, accommodative orthophoria; near, 4 degrees of exophoria. Accordingly, the prisms were incorporated in the final Rx.

Report, two weeks later, complete relief from headache, and a great increase of speed in typewriting. (R. M. P.)

BOOK NOTICES

New Books for review should be sent to Dr. E. O. Fjelstad, 209 Yeates Building, Minneapolis, Minnesota. Only Books of such nature as to be of interest to optometrists will be used in this department. Optometric and Ophthalmic publications that have been issued in the past and which are still procurable through their publishers will also be reviewed, from time to time, as space permits.

EYELESS SIGHT. A Study of Extra-Retinal Vision and the Paroptic Sense. By **Jules Romain (Louis Farigoule.)** Translated by C. K. Ogden. New York: G. P. Putnam's Sons, 1924.

In our school days we quite often wondered how it was that the teacher, with her back turned, so aptly discovered the culprit and now, after reading this book by Romain, we believe we know.

Romain advances the astounding claim that we have numerous "eyes," histologically a part of our skin. He backs up his claim by demonstrations and experiments before prominent men of France, who, in a sense, "came to scoff but remained to praise." These men signed statements verifying what they saw, all of which are incorporated in the appendices of the book, for the reader to take as he wishes.

As we well know a faculty or organ may fall into a state of atrophy through disuse and it yet remains to be definitely ascertained whether at some stage in the process of evolution there is some form of life dependent upon extra-retinal vision. Suffice it to say that Romain strongly believes there is such a function although his theories are incomplete and much seems to be the product of the imagination.

Romain maintains that in the skin are minute cells to which he gives the term of "ocelli" whose function, if developed, would be that of vision, not vision as perceived by the true retina, which is a mental interpretation of the external object, but a sort of external projection of the object. Vision by the retina of the eye is internal while that of the ocellus is external. Romain does not claim that there is a conjunction of the two senses but that when the eyes are functioning they bring the objects to consciousness and when the ocelli are functioning the eyes must be functionless in order that extra-retinal vision may be complete.

Physiologically, Romain has advanced a possible process of the function of extra-retinal vision. It includes: A refractile body, an ocellary retina and an optic fibre. As to the process of the ocellary function it may be well to quote the author: "When the luminous rays have crossed the upper layers of the epidermis, whose transparence is sufficient for this, and strike the refractile body, they undergo there successive refractions, and come to form on the ocellary retina a more or less crude image. The refractile body, in fact, should behave not like a simple lens, but like a very complete optical system. The central part, at least, of the luminous pencil, is forced to pass successively through several surfaces and several media; the upper surface of the oval cell—the upper region of the cytoplasm—the upper surface of the nucleus—the thickness of the nucleus—the lower surface of the nucleus—the lower region of the cytoplasm—the lower surface of the cell."

In the experiments Romain excluded all possibility of thought transmission or telepathy. On the part of the subject, upon whom the experiments were made, there was a desire to smell and feel the object to be seen. While these experiments were made the subject's eyes were tightly bandaged excluding all possibility of normal or retinal vision. To further prevent normal vision a screen was placed before the subject in some cases but "vision" was still possible. The desire to smell the object was more noticeable when colors were placed before the subject and to further prevent the function of smell, colors as little oderless as possible were used. To prevent the possibility of recognizing the object by touch it was placed at some distance from the subject, or placed in an ordinary printing frame such as used by photographers.

We are giving this review, not because of any optometric interest in the book, but, because of the evident interest in the work of an eminent French author and because the public insists on questioning us about these seemingly impossible occurrences.

E. O. F.

ABSTRACT DEPARTMENT

Optometric and ophthalmic Journal articles and reprints to be abstracted should be sent to Dr. G. L. DuPlessis, 209 Yeates Building, Minneapolis, Minnesota. Only papers of interest to optometrists will be reviewed in this department.

Evolution of Binocular Vision. Society Proceedings. American Journal of Ophthalmology, October, 1925.

The fundamental fact which brought about the evolution of the primates was the cultivation of vision, and the increased reliance on it for guidance. The primates came into existence in North America, around Wyoming, before the beginning of the tertiary period, where they separated from the insectivorous animals. Shortly before the beginning of the tertiary period, the "lemurs" came into existence and in one class of them smell began to be replaced by vision as the guiding sense. In the "marmoset," this supplanting of smell by sight was very marked in comparison with the "tarsus." The "chameleon" illustrated in a striking way the prebinocular vision stage, as this animal could look in a forward direction with one eye, and in a backward direction with the other. A true macula lutea was found only in the apes and man.

The evolution of the extrinsic muscles took place later as "lemurs" moved their head to see objects instead of their eyes while the increase of the visual field was first secured by movement of the orbit in some animals and variations in shape of the pupil in others.

The great anthropoid apes while possessing the ability to perform conjugate movements, could not sustain convergence for any great length of time. The superiority of man's eyes lays not so much in the construction as in the ability to perform more complex adjustments. G. L. DuP.

Development of the Human Iris. Mann, Ida C. British Journal of Ophthalmology. October, 1925.

According to Mann, the development of the iris can be divided into four stages:

(1) Fourth to seventh week of fetal life, before formation of the anterior chamber, during which stage an annular vessel is formed at the site of the future "circulus arteriosus iridis major."

(2) Seventh to eleventh week, when with the appearance of the anterior chamber, the mesodermal iris is formed.

(3) Eleventh to twelfth week, in which the ectodermal iris first makes its appearance.

(4) Third to eighth month, during which the pupillary musculature is formed from the ectodermal iris, and the central part of the mesodermal iris atrophies, leaving the pupil clear.

The definitive iris shows: (1) A peripheral portion consisting of the entire thickness of the original mesodermal iris, plus the ectodermal iris and bounded internally by the "circuclus iridis minor." (2) A central portion consisting of a thinner layer of mesoderm carried forward secondarily by

growth of the ectodermal iris and from the front of which the original central part of the mesodermal iris (pupillary membrane) has disappeared.

The paper is profusely illustrated with micro-photographs made with the Gullstrand Slit-Lamp.

G. L. DuP.

Eye Diseases as An Index to Pathological Conditions Within the Body. Cullom, M. M. Ear, Eye, Nose and Throat Monthly. Vol IV, No. 7, 1925.

Cullom relates how, aside from injuries, focal infections and malignancy, eye diseases are merely symptoms of other disturbances; and how this diagnostic method is worthy of consideration.

Iritis, corneal ulcers and retinitis now require investigation of the teeth, tonsils, sinuses, etc., and the removal of the cause, usually a focal infection wipes out the ocular disease.

Eleven illustrative cases are then presented. There are three cases of iritis due to tonsils, one due to teeth and one caused by antrum infection. Two are cases of keratitis due to bad teeth. Two others are corneal ulcers, one due to teeth, the other, to tonsils. The other two are cases of embolism and neuritis, both caused by infected tonsils.

In almost every case, removal of the cause was accompanied by an immediate improvement in the condition of the patient, leading eventually to a complete recovery.

Attention is called to the possibility of curing certain vavular diseases by removal of focal infections when present. This subject is said to present a new field to the medical investigator and is rich in possibilities.

G. L. DuP.

Subnormal Accommodation. Duane, A. Archives of Ophthalmology. Vol. LIV, No. 6, Nov., 1925.

The conclusions arrived at by Duane are the results of a study of cases covering a period of twenty years. The author claims that there is no sharp dividing line between paralysis and insufficiency of accommodation, the latter being a milder form but being often more troublesome than the former. Accommodation insufficiency is a relative condition depending on the normal amount possessed by the individual at that particular age. It may be static, due to intra-capsular changes, or dynamic, due to deficient nerve centers. The dynamic variety may be free from pupillary involvement or it may be accompanied by either total or reflex iridoplegia. Static insufficiency of accommodation has no up and down variations but follows the senile decline of accommodation, being subnormal for that age throughout life. It is almost always bilateral. Asthenopic symptoms, when present, are mild and easily relieved by glasses. The author considers this condition a true premature presbyopia. Dynamic insufficiency with total iridoplegia is either due to the transient effects of poisons such as atropin, or more permanently to structural changes as paralysis of the third nerve. Dynamic insufficiency with reflex iridoplegia (Argyll-Robertson pupil) is usually secondary to mostly syphilis. In these cases, both the iridoplegia and the insufficiency vary in amount. Dynamic insufficiency without iridoplegia is the functional variety. It causes great discomfort and variations are frequent. The author reports a number of cases of this type he observed and discusses their cause and their relation to other anomalies. The general symptoms of accommodative insufficiency are enumerated, but attention is called to the difficulty of differentiating between symptoms of the conditions causing the insufficiency, those of the accommodative insufficiency itself and those of convergence insufficiency.

The treatment consists in: (1) The correction of refractive errors and aid to near vision by the addition of plus power. (2) Removal of the causes of eyestrain such as poor illumination, etc. (3) Healthy surroundings and moderate exercises. (4) Removal of the cause of the insufficiency if it can be found. (5) Treatment of associated conditions such as muscular anomalies. (6) In the functional type, direct exercises of accommodation and convergence are of benefit. This is done by approaching some suitable type card first to one eye, the other being covered, then to the other eye, until the type blurs. This is also done binocu-

larly until the type doubles, thus exercising both accommodation and convergence at the same time.

The author concludes by stating that the use of pilocarpin and eserin as ciliary muscle stimulants is useless, but that strychnine seems to be of advantage.

The article is illustrated with a graph of normal and subnormal accommodation. It also contains a table giving the minimum, mean and maximum accommodations for from 8 to 72 years of age. G. L. DuP.

The Light Sense in the Periphery of the Human Retina. LoCascio, G. Ann. di Otta. e Ocul., June, July, 1925.

LoCascio finds by experiment that there are two types of dark adaptation, one rapid, the other slow. In the first set of experiments he found that 10° temporally from the fovea, the light sense increases rapidly for the first seven minutes, then decreasing steadily for 15 minutes after which it remains stationary. The slow type of adaptation is found 30° nasally from the fovea, it increases slowly for 30 minutes after which it remains stationary. In the second set of experiments he found variations in light sense in the different parts of the retina; a perimacular area, in particular, was found to have a lower light sense than the macula itself; he calls this zone the "physiological perimacular night-blind zone" and believes that it is caused by the greater thickness of the retina at that point. The diminution of the light sense beyond the 30° or 40° area is not due to the obliquity of the light ray nor to the size of the pupil but rather to an alteration in the structure of the retina.

The paper is illustrated and contains an extensive bibliography of the subject. G. L. DuP.

The Influence of Heredity Noted in Optometry. Barnes, H. R. Proceedings of the Optometric Society of the City of New York. Vol. 1, No. 5, October, 1925.

In a lecture delivered before the Brooklyn Optometric Society Barnes outlines the influence of heredity on myopia, astigmatism convergent squint, ptosis cataract and nystagmus. He cites records of his own cases where children and parents were highly myopic and where heredity could be easily traced, either to the paternal or the maternal side, not only as a predisposing factor but as the whole cause. The author also contends that astigmia of large amounts and against the rule is inherited not only as to the amount, but as to the approximate axis as well. Similarly convergent, strabismus, ptosis and other serious pathologies are often rightly attributed to heredity. The author advocates the accurate computation by optometrists, of those records involving hereditary elements, as their contribution to that field. G. L. DuP.

Relative Glare of Moderately Colored Lights, Luckiesh, M.; Taylor, A. H., and Holladay, L. L. Journal Optical Society of America. October, 1925.

In an investigation on the relative glare of light from tungsten lamps after passing through canary, amber, light blue and colorless glasses, and appromixating conditions similar to that of passing automobiles on the highways, the authors found that the use of colored headlights does not appreciably improve visibility conditions on the road. E. O. F.

Binocular Vision After Unilateral Traumatic Aphakia. Horton, J. J. American Journal of Ophthalmology, Nov., 1925.

Horton reports an unusual case where a mine worker was struck in the right eye by a piece of metal. This caused an incarceration of the iris in the wound and a general clouding of the lens. A keratome incision was made and lens material permitted to escape, later the lens was needled. Two months later the patient was found to have good vision with proper correction before the aphakic eye, and though conscious of two images, a clear small one superimposed over a fainter and larger one, he insisted that binocular vision was better than with the left eye only. This increase in visual acuity was marked only on fixation of stationary objects while for moving objects he preferred using the left eye. Another peculiarity was the remarkable range of vision in the aphakic eye. G. L. DuP.

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THE VISUAL SURVEY AND SERVICE CORPORATION

In time all good things come to pass. For the past several years an organization has been hoped for which would meet the gradually growing demand for visual survey and service work. That it is now in the process of incorporation, we are authentically notified. The organization is to bear the name of The National Visual Survey and Service Corporation. It will carry as one of its worthy features an educational department which will be under the guidance of one of the most noted educators in the country. His assistants are being carefully chosen for the respective positions they are to occupy. The men who are to assist in the work will meet early in December to complete the entire layout.

The course of schooling and practical training will cover several years of work. The subjects involved are all germane to the essentials of a well rounded out education necessary to a complete service in industry.

The organization has a message bearer to all interested, in the form of a monthly magazine called "Modern Vision." The purpose of this magazine is to treat in a most practical way the following subjects in their relationship to vision. The subjects are Education, Illumination, Industry, Insurance and Traffic.

The professional men doing the visual survey and service work are to receive a compensation of such a nature as to appeal to the very best men. Only those practicing ethically and professionally are eligible to matriculate. They must also belong to their state and national association. They must be men of good moral character. Practitioners not now eligible may become so by subscribing to and carrying out the fundamentals of the organization.

The standard for membership must be high as the responsibilities and obligations to Education, Industry, Commercial Life, Insurance and Traffic are most exacting and fixed. The men assuming the burden as set forth in the service plan and contract must be educated and skillful operators with ophthalmic equipment, otherwise embarrassment would ultimately follow.

As fast as the men can qualify they will be needed, in fact many more could be used than are able to matriculate. This is the first time a thorough and complete service has ever been available.

More interesting information will follow shortly. C. C. K.

OPTOMETRIC INSTRUMENTATION

A Massachusetts optometrist, in giving advice to recent graduates of one of our optometric schools, stressed a subject which may well be taken to heart by practicing optometrists; that of proper instrumentation and choice of location of offices.

As a possible answer to the oft repeated question of "What's the matter with optometry?" we may say that it is not optometry that is wrong but the usual idea as to equipment is antiquated and calls for improvement. Not that the manufacturers have fallen short but that the optometrists have worked themselves into a rut, have reached the point of stagnation, and are too apt to let progress inoculate the other fellow.

In visiting the offices of various optometrists we find that those who are doing the most business are those who have the most equipment and at least know how to handle it. But we are sorry to say there are too many improperly equipped and too many lacking the essential equipment. An old chair, scratched trial lenses, messy test chart and poor illumination are the most glaring of imperfections in this modern age of refracting room instrumentation.

We do not intend to thoroughly plan an establishment for optometrists at this time but merely wish to convey to others some of the impressions received from visiting offices of fairly successful optometrists. One of the most important items to be considered is that of the reception room. This should be comfortably and tastily furnished with a good grade of furniture. An optometric lecturer once stated that, if necessary, the optometrist should forego home furnishings and properly furnish the reception room of his office first.

It is necessary to consider the women patrons in furnishing the reception room and arrange for their convenience. In other words, to place them at their ease. A mirror conveniently placed is an absolute necessity. A painting, not gruesome or an ugly splash of color, has a place in any reception room. Floor and table lamps conveniently arranged quite often give the needed touch. A nervous or excited patient may be the result of an ugly reception room and we all know how essential it is for the patients to be at their ease for the examination of the eyes. Remember many are there for the first time and do not know what is before them.

The refracting room is the workshop and it should appear as one, not clottered with odds and ends and useless equipment. In having good equipment and in knowing how to use it the effect on the patient is more than most understand. The thought of the patient is: "You must know a great deal to be able to use all this."

As to the equipping of the refracting room present-day methods call for more than just a chair, test chart and trial lenses. It needs a comfortable chair, or rather several of them, properly illuminated test charts of which there are many on the market, noteworthy of which are the Green test cabinet, Twentieth Century, Ives Visual Acuity, Genothalmic and the Clason. The choice is more or less a personal matter. At this point it is well to bear in mind that on the wall containing the chart and in the immediate vicinity other objects should be far enough removed to prevent needless wandering of the patient's eyes. As to test lenses we have the ordinary trial lenses in a large and a small frame. These require a trial frame of which there are different kinds with varying adjustments. For those not caring for the trial lenses there are the different makes of phorooptometers. If one uses the trial lenses the phorometer facilitates the making of muscle tests.

Of ophthalmometers (keratometers) there are two at present on the market which are made in this country, with a new one in the process of designing, we understand.

Equipment which may not be used in every case but can be found useful and necessary are the perimeter, campimeter, keratometer and amblyoscope. A point to be borne in mind is to know how to properly use the equipment so as to favorably impress the patient. Do not rush through the examination. At a recent large medical meeting a leading physician in summing up the work of special practitioners said: "It's better to spend plenty of time on a patient, do thorough work and charge a larger fee." By doing thorough work and taking plenty of time the larger fee will come easily.

One of the best improvements in refracting rooms is that of illumination. Years ago it was considered absolutely essential that a room, completely darkened, was needed, while today we find many getting exceedingly good results with the illumination slightly diminished and even in the natural light. The writer prefers a room with the illumination slightly diminished, thereby having extraneous reflections and marked shadows at a minimum. With an inside room the problem of lighting becomes one of proper candle power and shading while with an outside room glare and sharp lights are remedied by curtaining of the windows. The best results are obtained where the refraction is made under conditions more or less natural to the patient. But few occupations call for a light flashing in the eye or in the brightest of light. Therefore the subdued lighting of the room.

The equipment of the refracting rooms of our progressive men may appear to the less progressive as a useless expenditure of money. They say it is there merely for psychological purposes, that the patient is being bluffed into believing they are receiving a great deal for their money. To the man who does not understand the uses of the various instruments their purpose is for psychology but the man versed in optometric instrumentation works on a plan of giving the patient all he can and to thoroughly satisfy himself that he is doing all that is optometrically possible.

E. O. F.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

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BULLETIN MINNESOTA ASSOCIATION OF OPTOMETRISTS
The Semi-Annual Meeting

The semi-annual meeting of the Association will be held on Monday, December 28, 6:30 P. M., at the Odin Club, Metropolitan Bank Building at Minneapolis.

Plans for the next annual convention will be formulated and convention committees will be appointed. Also the ballots for State Board candidates will be counted.

J. I. KURTZ, O.D.,
Secretary.

THE NEW ST. PAUL SOCIETY

The next meeting of the New St. Paul Optometric Society will be held December 8th. This organization has been reformed and will have an educational program every month. Dr. Earl E. Jones was elected president at the last meeting. A more detailed report will be given later.

THE MICHIGAN ASSOCIATION

The educational department of the Michigan Society of Optometrists will conduct a post-graduate clinic at the Hotel Statler, Detroit, on February 22nd, 23rd and 24th. A detailed program will be given later.

DR. G. L. PARKER,
Chairman.

THE HEAD OF THE LAKES ASSOCIATION

The Head of the Lakes Association of Optometrists met at the Hotel Androy, Superior, Wis., on Thursday evening, November 12, for election of officers for the ensuing year.

Dr. A. G. Skogg was unanimously elected president.

Dr. R. Backman was unanimously elected vice-president.

Dr. L. J. Roycraft was elected, unanimously, secretary-treasurer.

After the election Dr. Backman read a very instructive paper on Cyclophoria and the value of lenses in its treatment.

SOUTHERN MINNESOTA ASSOCIATION

A very successful meeting of the Southern Minnesota Association was held in the Home Investment Building at Albert Lea, Minn., Thursday evening, October 29th.

From an educational standpoint this meeting was the biggest of the year, and much credit is due the local committee of which Dr. W. B. Lyon was chairman.

A very delightful dinner served in the Business Men's League Rooms was complimetary by the N. P. Benson Optical Company. Mr. John R. Nelson, representative of this company, was present at the meeting and a suitable resolution was adopted, thanking Mr. Nelson and the firm he represented for their kindness in this capacity.

A short business meeting followed, after which the well planned program commenced.

WALTER H. NORDIN, O.D.,
Secretary.

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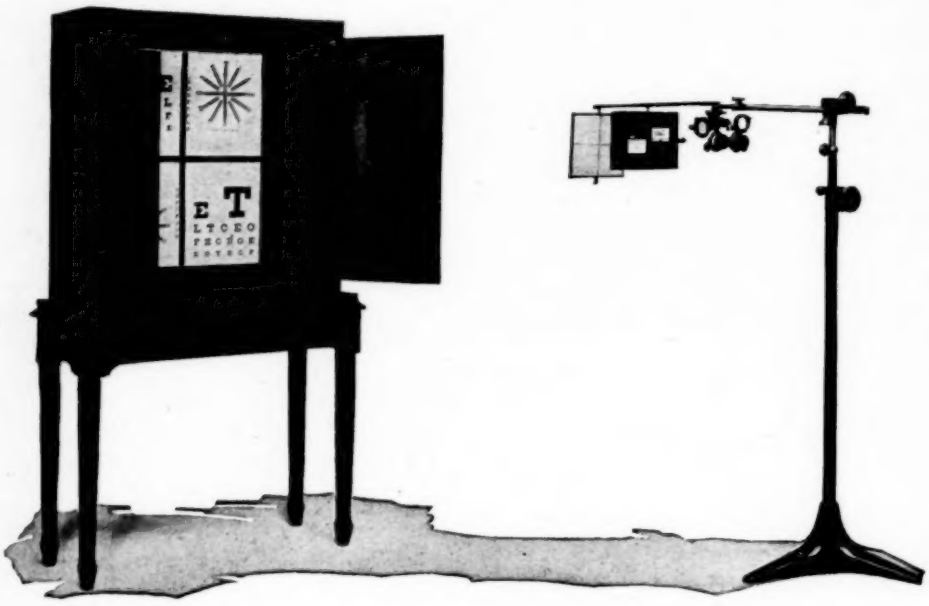
Because it is no longer difficult!



THE HEMISENSORY BINOCULOMETER makes muscle testing a pleasure to both patient and examiner; it is no longer a **Routine**—it is a NECESSITY!

What the fogging system is to the ciliaries, the HB test is to the extrinsics; it is the missing link in the evolution of ocular examination. It is the first real diagnostic test, combining, as it does, the tests for errors of refraction, and muscle imbalance. Both tests are made at one and the same time.

No painful double images, no befuddling streaks, no burning points of light, no unnatural images, no mechanical imperfections introduced; instead, **one instrument, one chart**—no more, no less.

The Hemisensory Binoculometer is the little giant of the refracting room; a quiet, sedate instrument lending professional atmosphere, it makes special appeal to the successful man who has higher ideals than merely to "impress the public."

It is the instrument you CAN afford **to own,** the method you CAN NOT afford to **be without!** Descriptive matter and prices on request.

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